# PLANT PROTECTION BULLETIN

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## FAO PLANT PROTECTION BULLETIN

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# FAO Plant Protection Bulletin

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World Reporting Service on Plant Diseases and Pests


## The Value of Phytosanitary Certificates


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CONSIDERATION of the actual value of phytosanitary certificates issued by exporting countries to accompany exportable plant produce would appear to be important and opportune, since there are plant quarantine specialists who say flatly that such certificates are worthless. In a sense, they are right; these documents are not worth more than the paper on which they are printed. In this respect they resemble banknotes, which have no intrinsic value either. The value of banknotes is based on the financial position of the bank of issue and their relative value is expressed in the rate of exchange. When foreign countries consider the position of the bank of issue sound, the rate of exchange is higher than it would be when the position of the bank is doubtful.

No one would ever think of reading what has been printed on a banknote, and the rate of exchange will by no means be influenced by the wording on it. Whenever financial experts wish to ascertain the value of the banknotes, they study the balance sheets of the bank of issue and the economic position in the country of issue. No one would expect the balance sheet or the economic position of a country to improve as a result of better wording of the banknotes they issue.

I fail to understand, therefore, why many people expect favorable results from improvement in the wording of phytosanitary certificates. These certificates bear evidence that the plant protection service in the country of origin has inspected the consignment as required by the quarantine regulations of the importing country. For satisfactory inspection, the following three factors are important:

1. The government of the exporting country should have an effective plant protection service and should make available the necessary funds for its operation.
2. The management of the plant protection service should be keenly aware of its responsibility to have inspections and other duties well performed.
3. Inspecting officers should have the technical knowledge and equipment required for the performance of their tasks.

Briefly, therefore, the essentials are: money, sense of responsibility, knowledge and equipment.

Obviously, none of these factors could be affected by the wording on the certificate. A plant protection service that is ill-organized and lacks funds, knowledge and equipment, would not be changed by more precision in the wording of the certificate, nor would persons who lack the necessary sense of responsibility be in any way reformed thereby.

It is the efficiency of inspection, not the certificate itself, which matters. If the value of an inspection is to be judged, the official bodies concerned in the exporting country should be consulted. The certificate serves to prove inspection but never conveys how that inspection was carried out. Officials with no sense of responsibility could even issue a certificate for an uninspected parcel.

If the plant protection service concerned has established its reputation, a simple note stating that the service has inspected the consignment, e. g. "Seen by the Plant

Protection Service of Gondwanaland," with signature and seal, is sufficient. If the service is inadequate, even the most elaborate and detailed certificate will be of little or no value.

It has been asserted that the inspecting officer would realize better what to inspect for if the requirements were printed in detail on the certificate. At the same time, importing countries desire that the certificate be accurately and legibly filled in, preferably by typewriter. This is a justifiable request, but it means that the inspecting officer cannot fill in the certificate during inspection. He has to do so later at the office, and this absorbs much of his time, present certification procedure being so complicated. This is done at the expense of the time which should be used for inspection.

Consequently, the only result of a complicated procedure of certification on inspection is that less time is available for such inspection. Since this is highly undesirable and as qualified technical workers are expensive and scarce, administrative personnel are in many cases recruited to write the certificates. In such cases the technical man who performs the inspections does not see the certificates. He hands in his data at the office and the certificates are filled in on the basis of these data.

In the Netherlands the procedure is as follows. Inspectors have handy pocket-size notebooks in which the regulations of all countries are given. The exporter submits an application stating exact data concerning the consignment as well as the country of destination. The inspector examines the consignment and issues a provisional inspection report, or writes his findings on the application form. He may consult his notebook for the regulations of the country of destination, but experienced inspectors know them by heart. The certificate is drawn up at the office on the basis of the application and the findings of the inspector, who does not, therefore, see the certificate or read its contents. The regulations to be observed are in his notebook, written in Dutch, and this is a great advantage; in the certificate they are printed in various languages. The Netherlands Plant Protection Service is required to issue certificates in the English, French, German, Italian, Spanish, Swedish, Polish and Czechoslovak languages, some of which, naturally, the inspectors cannot read.

So there is no reason why the wording of the certificate should be important. It is, on the other hand, very important that the paraphernalia of present certification should be completely removed and replaced by one standard certificate for the whole world. It would be sufficient to mention the contents of the consignment, and that they have been inspected by the plant protection service. International consultation merely on the wording of certificates is waste of time and money.

There are still too many words without real meaning in international consultation. It is only the work that counts; work which entails accurate study for the purpose of achieving more international standardization. How is plant quarantine practiced in the various countries? What improvements can be made in the various procedures, and how can we help each other?

We must realize that much can be improved and built up in the field of plant quarantine. This should be done in an atmosphere of goodwill and mutual understanding, but also with effort and sacrifice. Nothing can ever be accomplished if everyone wishes only to forward his own interests and views. Co-operation entails the subordination of many conflicting interests and viewpoints to the common good.

These may seem strong words for such a relatively simple thing as a phytosanitary certificate. But in this matter it is important that the principles of international consultation be respected, for otherwise co-operation, even on this simple subject, will fail.

It is hoped that this brief note will stimulate further consideration of the basic facts concerning phytosanitary certification, and the author will welcome any comments on the subject.

# Plant Disease Situation in the United States

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## *Diseases in Irrigated Areas of Central Washington in 1953*

NEW areas are coming under irrigation each year in central Washington as a result of the progressive development of the Columbia Basin and other smaller irrigation projects. New crops are also becoming important in the area. The result is a rapidly changing plant disease situation which is sometimes difficult to evaluate. A new disease record may represent the initial appearance of an important problem, or it may be only a chance introduction that will seldom recur. It is therefore important to record these occurrences and the circumstances under which they appeared. Some of the more noteworthy new records or unusual developments of plant diseases in irrigated central Washington during 1953 are as follows.

Mint rust (*Puccinia menthae*) was observed for the first time in eastern Washington in July 1953. The disease was found only in one field, a planting of spearmint (*Mentha spicata*). This field was irrigated by the furrow method except for a small portion which, because of topography, had to be watered by an overhead sprinkler. Rust was severe within the sprinkler-irrigated part but was not found in the rest of the field until October, by which time there had been a spread to the lower leaves over most of the 40-acre field.

This observation is significant because of the recent rapid increase in acreage planted to spearmint and to peppermint (*M. piperita*) in the irrigated areas, following damaging outbreaks of mint rust in other important mint growing sections on the Pacific Coast. The affected field was said to have been planted with roots obtained from stock that had been propagated in the Yakima Valley for several years; consequently the rust infection cannot be attributed directly to introduction of infected planting stock. The fact that damage was restricted to the sprinkled part of the field indicates that rust may not become an important disease in row-irrigated plantings, but does forecast a problem for growers using over-head irrigation.

Powdery mildew (*Erysiphe cichoracearum*) occurred generally on both peppermint and spearmint throughout the Yakima Valley during 1953. Some early defoliation resulted but hot weather during the middle of July apparently arrested the disease. The final effects on yield were probably insignificant. Since this mildew was so prevalent during 1953 it has doubtless been present on mint for some years but has escaped attention. Perithecia typical of *E. cichoracearum* were abundant on both peppermint and spearmint.

The mint mildew threatened to cause serious defoliation early in the season. Since powdery mildews often continue to spread during hot weather it is too early to conclude that the disease will be unimportant. It has potentialities for becoming more of a problem than rust for the irrigated areas. As in the case of mint rust, control measures will be complicated by the danger of contamination of the mint oil by fungicides.

Bean rust (*Uromyces phaseoli*) occurred in 1951 on sprinkler-irrigated dry beans grown on the Pasco project. In 1953 it was more general in the Pasco area and was also noted in the vicinity of Moses Lake. One late-maturing field affected was irrigated by rills. The rust was not early enough nor severe enough in this field to cause any yield loss.

Pod rot (*Botrytis* sp.) can usually be found to some extent in most bean fields, particularly on pods that touch the ground. An exceptionally damaging amount of pod

infection was noted in a field of the Small Flat White variety grown under sprinklers in the Moses Lake area. Counts of 100 plants in eight locations in this 60-acre field showed an average of 18 percent of the pods infected. Most were shrivelled and dry and covered with a mass of sporulating mycelium. Soil contact was an important contributing feature but in many cases very young pods were destroyed near the tops of the plants. The soil in this field was very sandy and probably required frequent irrigation. Also, the plants were not hilled, a practice which would have kept more of the pods from soil contact.

Root rot (*Fusarium solani* f. *phaseoli*) has rapidly assumed a primary position as a disease of dry beans in newly irrigated land. A survey of 30 bean fields revealed the importance of lack of rotation in the build-up of this disease. From only a trace the first year the percentage of infected plants increased to 37 the second year, 70 the third, 90 the fourth, and 100 in the fifth. Nevertheless, for economic reasons, the growers have neglected rotations and repeated beans as a cash crop. Yield losses are considerable but are not in proportion to the percentage infection because the bean plant can produce new roots even though the tap root system is progressively destroyed by root rot. High hilling and heavy irrigation must be practiced to establish these new roots.

### *Angular Leaf Spot of Squash in California*

In recent years, a bacterial leaf spot has been observed regularly in plantings of Black Zucchini squash (*Cucurbita pepo*) in the Colma area, near San Francisco, California. The disease in especially noticeable in August and September, but it can be found at any time since this crop is grown all the year round and overhead sprinkling is used during the dry months.

The disease is characterized by distinct small and large brown spots with prominent yellow haloes around the necrotic centers. Water-soaking of the dorsal spongy mesophyll of affected leaves is pronounced, especially at the time of watering or after a rain. Microscopic examination of water mounts revealed masses of bacteria oozing out of the cut edges of the spots. On potato-dextrose-peptone agar incubated at 28° C, small white-gray colonies with entire margins and some markings on the surface appeared after 48 hours.

A water suspension from 48-hour-old cultures was sprayed on young plants of Black Zucchini squash and cucumber. Other plants were sprayed with distilled water and handled like the inoculated plants. Three days later numerous small, water-soaked spots were observed underneath the leaves of the inoculated plants of both squash and cucumber. The checks showed no spots of any kind. Within five days, the inoculated plants showed medium-size, almost translucent spots, singly and in groups. Yellow zones were evident around dark spots on the squash leaves. Isolations from spots on inoculated squash and cucumber produced the same organism as was originally isolated from field material. Greenhouse tests suggested the similarity of the squash organism to *Pseudomonas lachrymans* (E. F. Sm. and Bryan) Carsner, the causal agent of cucumber angular leaf spot. Bacteriological comparison showed no physiological differences and it was concluded that the bacterium from Black Zucchini squash was identical with *P. lachrymans*.

Inoculation tests with a squash isolate were positive on banana squash, watermelon, cucumber, honeydew melon, and muskmelon. *Pseudomonas lachrymans* from both Marketer and Black Diamond cucumbers produced typical lesions on Black Zucchini squash.

This seems to be the first record of *Pseudomonas lachrymans* on field-grown squash. It is very possible that, because in many cases field diagnosis is made on the basis of symptom pattern, the disease could be mistaken for the bacterial spot of squash caused by *Xanthomonas cucurbitae* (Bryan) Dowson. The two diseases are difficult to distinguish when they occur on cucumbers.

### *Longevity of Wheat Nematode*

During 1939, a specimen of wheat nematode (*Anguina tritici* Steinbuch) galls collected in Virginia was sent to the University of Idaho for class use. Since then the specimen has been stored in a cork-stoppered bottle.

On 12 November 1952, a few of the galls were macerated in water in a watch glass. The following day many of the worms showed considerable activity. After a period of drying, water was again added to the watch glass on 20 January 1953. The next day the worms were active again. The specimen was allowed to dry out a second time. Water was added again on 25 February 1953, and by afternoon, a few of the worms were active. This would prove that the worms had remained alive for 14 years.

To test further the viability of the nematodes in the stored galls, a number of the galls were macerated in water which was allowed to stand overnight and then poured on pasteurized soil in two pots seeded with Lemhi and Marquis wheat respectively on 25 February 1953. No distortion in growth habits of the plants was noted. However, when the grain was mature, 28 May 1953, five heads out of a total of 46 of Lemhi and ten out of a total of 42 heads of Marquis showed the presence of galls. All culms bearing infected heads were noticeably stunted and still slightly green. One culm of Lemhi about 6 inches tall was badly distorted. The average height of the healthy culms varied from 18 to 30 inches. Microscopic examination of a macerated, newly-developed gall showed the contents to be made up of innumerable active worms.

Length of time that the wheat nematode can live has been reported as 10 years and upward. The longer periods have been questioned but one report cited proof that the nemas will live for 28 years.

No one has offered evidence to prove that the nematodes, even though active after long periods of dormancy, still retain the ability to infect wheat. These observations show that *Anguina tritici* can retain its viability and its capacity to infect wheat after 14 years of dormancy.

On 16 November 1953 several more galls from the original specimen were macerated in water. Movement of the worms was noted on 19 November 1953. This extends the viability of the worms of the original specimen to 15 years.

# Distribution Maps of Insect Pests in Canada

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In 1949 the publication of a series of maps of insect distribution in Canada was begun in *The Canadian Insect Pest Review*, and by December 1953 some 50 maps had been compiled and published. Thirty-eight insect pest species and three groups of species were dealt with. Distribution maps for grasshoppers were based on seasonal surveys in the Prairie Provinces and were published annually. In 1950 a map appeared showing the distribution of Dutch elm disease, of which certain species of Scolytidae are vectors. This disease first appeared in Canada, in the Province of Quebec, during the Second World War and has since spread rapidly, particularly in a westerly direction across southern Ontario.

A list of the maps is set out below, with the appropriate volume and page references underneath each title. Copies of the Review may be obtained free of charge from The Canadian Insect Pest Survey, Entomology Division, Department of Agriculture, Ottawa.

Armyworm, *Pseudaletia unipuncta* (Haw.)
27 : 215A; 29 : 198A

Asparagus beetle, *Crioceris asparagi* (L.)
31 : opp. 133

Beet webworm, *Loxostege sticticalis* (L.)
30 : 270A

Carolina grasshopper, *Dissosteira carolina* (L.)
30 : opp. 247

Carrot rust fly, *Psila rosae* (F.)
31 : opp. 205

Chinch bug, *Blissus leucopterus* (Say)
31 : opp. 200

Clear-winged grasshopper, *Camnula pellucida* (Scudd.)
30 : 248A

Colorado beetle, *Leptinotarsa decemlineata* (Say)
28 : 102A

Corn earworm, *Heliothis armigera* (Hbn.)
29 : 151B

Diamondback moth, *Plutella maculipennis* (Curt.)
30 : 230B

Dutch elm disease (Vectors Scolytidae)
28 : 259A

European corn borer, *Pyrausta nubilalis* (Hbn.)
27 : 216A; 29 : 151A

European wheat stem sawfly, *Cephus pygmaeus* (L.)
29 : 205A

European winter moth, *Operophtera brumata* (L.)
29 : 235A; 254A

Grain wireworms, *Ctenicera* spp.
31 : opp. 256

Grasshoppers
27 : 235 A, B, C; 28 : 98 A, 256 A, B;
29 : 243 B, C; 30 : 268 A; 31 : opp. 328

Grain aphids, mainly *Toxoptera graminum* (Rond.)
27 : 185A

Greenbug, *Toxoptera graminum* (Rond.)
29 : 178A

Hessian fly, *Phytophaga destructor* (Say)
30 : 196B

Imported cabbageworm, *Pieris rapae* (L.)
30 : 200B

Japanese beetle, *Popillia japonica* Newm.
28 : 98B

Pale western cutworm, *Agrotis orthogonia* Morr.
30 : 156A

Pea moth, *Laspeyresia nigricana* (Steph.)
29 : 181A

Pea weevil, *Bruchus pisorum* (L.)
30 : 158A

Potato flea beetle, *Epitrix cucumeris* (Harr.)
29 : 159A

Potato leafhopper, *Empoasca fabae* (Harr.)
29 : 210A

Red-backed cutworm, *Euxoa ochrogaster* (Guen.)
30 : 151A

Red-legged grasshopper, *Melanoplus femur-rubrum* (Deg.)
30 : 222B

Red turnip beetle, *Entomoscelis americana* Brown
29 : 175A

Seed-corn maggot, *Hylemya cilicrura* (Rond.)
31 : opp. 174

Spinach leaf miner, *Pegomya hyoscyami* (Panz.)
31 : opp. 173

Spotted asparagus beetle, *Crioceris duodecim-punctata* (L.)
31 : opp. 132

Spotted cucumber beetle, *Diabrotica undecim-punctata howardi* Barb.
31 : opp. 234

Striped cucumber beetle, *Acalymma vittata* (F.)
31 : opp. 235

Squash bug, *Anasa tristis* (Deg.)
30 : 270B

Tarnished plant bug, *Lygus lineolaris* P. de B. = *L. oblineatus* (Say)
30 : 192A

Tomato hornworm, *Phlegethontius quinquema-culatus* (Haw.)
31 : opp. 236

Tuber flea beetle, *Epitrix tuberis* Gent.
28 : 102B; 30 : 254B

Two-striped grasshopper, *Melanoplus bivit-tatus* (Say)
30 : 222A

Wheat stem maggot, *Meromyza americana* Fitch
30 : 228A

Wheat stem sawfly, *Cephus cinctus* Nort.
29 : 185A; 31 : opp. 287

Zebra caterpillar, *Ceramica picta* (Harr.)
31 : opp. 172

# Olive Psyllid in Libya, 1953/54

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THE olive psyllid (*Euphyllura olivina* Costa) is found throughout the Mediterranean area, where it sometimes causes serious damage during the flowering season. The insect overwinters as an adult. Egg laying takes place early in the spring as the new shoots sprout, the eggs being deposited on the terminal shoots, on the underside of the leaf along the midrib. The eggs take 10 to 15 days to develop and the nymphs about 30 days. There are several generations per year; however, only the first generation is of economic concern. After the larvae have hatched, they attach themselves to the inflorescences before blooming, pierce the flower buds or their peduncles, and thus destroy the flowers.

The larvae secrete pure white, waxy material that often completely covers the inflorescences with a flaky down. On the other hand, the leaves and branches that are covered with a sugary honeydew exuded by larvae often become covered with a heavy fumagine.

## *Geographical Distribution and Factors Affecting Infestation*

In Tripolitania, the olive psyllid is widespread and often causes serious damage to olive trees. On the other hand, damage caused by this pest was not noticed in Cyrenaica, nor on the few olive trees grown in the oases of Fezzan.

The spread of this insect seems to be determined by climatic conditions. In fact, it is in the more humid regions that it causes most damage, i. e. on the western coast, the area from Tripoli to Suani-Castel Benito, Tagiura, Ain-Zara, and in the Misurata region. However, it is found in all the olive groves of Tripolitania, including those of the Jebel, from Coussabat to Nalut. South of the Jebel, I noticed some of its ravages at Beni Ulid.

The intensity of infestation varies considerably from year to year. In 1953, for instance, heavy attacks were observed only in some parts of the littoral, while in 1954 almost all the olive groves along the coast were heavily infested, and rather serious sporadic infestation occurred in the Jebel from Homs to Coussabat, as well as from Garian to Zintan.

Even within the same plot there may be great differences in the degree of infestation. Although it is not always possible to determine the cause of variation, the microclimate and the sanitary condition of the trees seem to have a marked influence on the course of the attack. There is no indication that certain varieties of olive are more heavily infested than others. For instance, there is no noticeable difference between local and Italian varieties as regards degree of infestation. Generally speaking, well-pruned and aerated olive trees are less susceptible than more thickly-grown ones; the lower branches are more heavily infested than the upper portion of the crown; in regions with prevailing winds there is a distinct difference between the side exposed to the wind and the sheltered portion, which is definitely more heavily infested. Trees growing in a hollow with high humidity and little ventilation are usually more heavily infested than trees in the same plantation standing in the open.

## *Life Cycle*

In 1953, the first injuries caused by the olive psyllid were noted during the last week of March in an olive grove in the vicinity of Tripoli, indicating that egg laying had mainly begun about the second half of March, when the floral buds were not yet open. Egg laying continued till the beginning of May, and the presence of nymphs was observed from the end of March to the begin-

ning of June; after the middle of June, only adults were found. Depending on the variety and the region, full blossoming of the olive trees occurred in Tripolitania from the end of April to the beginning of May.

Between November 1953 and February 1954, there were only a few infestation centers. From the end of February to the beginning of March 1954, the period during which the inflorescences were formed, infestation increased. By the end of March, some olive groves were already heavily infested. Damage was greatest during and immediately following the flowering of the olive trees; the attacks then diminished gradually until they came to an end entirely by the second half of June on the coast and by the end of June or the beginning of July in the Jebel.

Hence we may summarize the life cycle of the olive psyllid in Tripolitania thus:

Egg laying begins, and there is sporadic appearance of a few infestation centers with nymphs, between November and February. Overwintering is mainly by adults; during the hibernation period, damage is practically nil. The main attack occurs at the end of February and the beginning of March, when the inflorescences are well formed but still closed. The peak period of infestation is during and immediately after flowering in April and May. Damage decreases gradually and ceases entirely at the end of June or the beginning of July. During the rest of the summer, only adults are found, and there are therefore no summer generations.

## *Chemical Control*

In order to determine which insecticides are most effective against this pest, laboratory and field trials, using hand and machine sprayers and dusters, were carried out in 1953. The following is a summary of the results:

*Laboratory Tests.* Olive branches heavily infested with the psyllid were treated on 16 April with a hand sprayer and kept in the laboratory until 21 April, at which time the infested inflorescences were examined under the binocular magnifying glass. The number of infested spots where all the insects were dead and those where there were still some living are recorded in Table 1.

Table 1. – *Results of laboratory tests on the effectiveness of various formulations of insecticides against olive psyllid*

| Insecticide used | Number of spots infested with insects[1] | |
|---|---|---|
| | Dead | Alive |
| Nicotine sulfate 1 % + liquid soap 1 % | 25 | 0 |
| Nicotine sulfate 0.5 % + liquid soap 1 % | 80 | 0 |
| Nicotox (20 % nicotine) 0.3 % | 99 | 1 |
| Nicotox 0.4 % | 100 | 0 |
| Etilon (20 % parathion) 0.1 % | 100 | 0 |
| Etilon 0.15 % | 95 | 0 |
| Control | 0 | 100 |

[1] Each spot infested with approximately 5-10 nymphs.

All the formulations of insecticides used showed good wettability and did not burn the inflorescences.

*Field Trials with Knapsack Applicators.* During the second half of April, experiments were made on heavily infested olive trees using knapsack sprayers and dusters. About one week after the treatments, damaged branches were examined in the laboratory, and the results are summarized in Table 2.

Table 2. – *Results of field trials on the effectiveness of various formulations of insecticides against olive psyllid*

| Insecticide used | Number of spots infested with insects | |
|---|---|---|
| | Dead | Alive |
| Nicotine sulfate 1 % + liquid soap 1 % | 15 | 0 |
| Nicotine sulfate 0.5 % + liquid soap 1 % | 25 | 7 |
| Nicotox 0.3 % | 46 | 4 |
| Nicotox 0.4 % | 51 | 7 |
| Etilon 0.1 % | 80 | 0 |
| Etilon 0.15 % | 40 | 0 |
| White oil 1 % + Nicotox 0.3 % | 14 | 7 |
| White oil 1 % + Etilon 0.1 % | 7 | 23 |
| White oil 1 % + DDT 50, 0.2 % | 51 | 24 |
| Lindane emulsion (20 % active ingredient) 0.5 % | 100 | 0 |
| Lindane emulsion 1 % | 50 | 0 |
| BHC dust 0.5 % | 48 | 2 |
| Control | 0 | 50 |

The formulations used all showed fair to good wettability and only nicotine sulphate in combination with soap caused light burn to the inflorescences.

Treatments with emulsifiable white oil alone or in combination with other insecticides are of definite value, since they can be used against both the psyllid and scale insects. In this experiment, however, its effectiveness against the psyllid was inadequate. On the other hand, nicotine sulfate, as well as products with a parathion or BHC base, proved highly effective.

*Field Trials with Power Applicators.* Since knapsack duster or sprayer is inadequate for treating large olive groves, two experiments, one with a power duster and another with a power sprayer, were carried out.

In April 1953, 121 average-sized olive trees at Sidi Mesri were treated with Nicotex (nicotine content 20 %) diluted to 0.3 percent. It was applied by a power sprayer with a capacity of 400 liters. In May, 150 large olive trees bordering the road of a holding at Tagiura were dusted with a BHC dust containing 0.5 % gamma isomer, applied by a power duster. Both power duster and power sprayer proved effective, especially the former.

### *Cultural Control*

Since sturdy olive trees with an even crown and good aeration are usually less infested by parasites, pruning experiments were made during the 1953-54 crop year. The value of pruning became evident from the following results. In April 1954, on 33 branches of the pruned olive trees, 62 psyllid-infested spots were observed, varying from 0 to 12 spots per branch; while on the same number of branches of unpruned trees, 229 psyllid-infested spots were found, ranging from 3 to 12 spots per branch.

### *Summary*

The olive psyllid has not been found in Cyrenaica or Fezzan. In Tripolitania it is found in all olive groves, but especially in the most humid parts of the littoral, and sporadically in the Jebel.

The presence of infestation centers with laid eggs and nymphs was noted from November to the end of June or the beginning of July. The main attack takes place during and immediately after the flowering of the olive trees, from April to May. During the summer only adults were found; therefore there are no summer generations.

Spraying with insecticides containing nicotine, parathion or BHC, and dusting with BHC, have proved very effective against larvae and adults of the insect.

Proper pruning and aeration of the olive trees definitely reduce the damage caused by the psyllid.

# Outbreaks and New Records

## Bolivia

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THE following notes deal with the incidence of insect pests during the period December 1953 to June 1954. Identification of the insects was made by specialists of the United States National Museum as noted.

### Insects of Fruit Trees

Scale insects, identified by H. Morrison as *Orthezia praelonga* Dougl., were causing serious damage to citrus groves in Riberalta area in northern Bolivia when I visited there in January 1954. It appeared to be a serious limiting factor in production of citrus fruits. Little was being done towards control for lack of sprayers and insecticides.

A species of cerambycid beetle, identified by G. B. Vogt as *Trichophorus hirtus* Berg., is the cause of extensive damage to peach trees in the Cochabamba and other peach growing regions. These borers are particularly damaging in the older orchards. The trees gradually lose the bark from infested areas and present a ragged, neglected appearance. Sections of branches from one of the borer-ridden trees, collected near Cochabamba early in 1953, were placed in a rearing cage. By 8 March 1954 several of the older borers had emerged. An examination of the caged wood on 19 August 1954 showed the remaining borer larvae still active, with nothing but the dry wood to feed upon. Cutting out and burning of the badly infested trees is being done in some plantings to check the damage.

### Insects of Field Crops

Adults of greenish, hymenopterous larvae which cause spectacular damage to potato foliage in south central Bolivia were identified by B. D. Burks as *Acordulecera* sp. He adds the note: "We have specimens of Wille's material from Peru in the U.S. National Museum; they are the same." In February, I saw potato plants in several fields badly defoliated by this pest, but nearby fields sprayed with DDT were undamaged.

Scarabaeids, identified by O. L. Cartwright as *Acognatha erythodera* Blanch., were collected in potato fields on the altiplano and were apparently the adults of grubs responsible for some injury to the tubers. Mr. Cartwright reported this insect to the U. S. National Museum as new and requested additional specimens.

A large scarabaeid, *Golofa pelagon* Burm., collected near Cochabamba in December 1953, was commonly observed to feed on the pollen and tassels of maize.

Chrysomelids collected at Copacabana in February 1954 were identified by G. B. Vogt as *Systena* sp., probably *S. littera* (L.). They caused moderate feeding damage at various places in the high plateaux to the foliage of oca (*Oxalis tuberosa*), an important tuber crop. Satisfactory control was obtained by timely applications of DDT.

An estimated 25 percent of the growing rice in the Riberalta area in northern Bolivia was destroyed by larvae of *Mocis latipes* (Guen.) in January 1954. These worms also caused lesser damage to grasses, maize and sugar cane. Pupae collected for rearing showed nearly 40 percent parasitism by *Sarcophaga* (*Sarcodexia*) *lambens* (Wied.), identified by C. W. Sabrosky.

A lygaeid, identified by R. I. Sailer as *Oxycarenus hyalinipennis* (Costa), was collected from cotton near Sucre early this year. Sailer states: "This must be a new record for Bolivia. The species is of Old World origin and has been recorded from Brazil. It is of considerable importance as a pest of cotton."

## Japan

K. SAWADA
Plant Protection Station, Yokohama

### New Records of Insect Pests

Narcissus bulb fly, *Lampetia equestris* (Fabricius) (= *Merodon equestris*), an insect of European origin, was found for the first time in Japan during July 1953 in the narcissus fields of some districts. It is believed that this pest has been introduced from foreign countries through infested bulbs. Action has been taken to prevent its further spread but complete eradication proves to be rather difficult.

Potato tuberworm, *Gnorimoschema operculella* (Zeller) (= *Phthorimaea operculella*), was discovered in this country in early 1951. Although this insect is known to be most destructive only in the warm dry climate, its spread in Japan is much feared. It is, therefore, being proposed that control of this pest be brought under Chapter IV of the Plant Quarantine Law of 1951, which empowers the Minister of Agriculture and Forestry to adopt emergency measures to eliminate or retard the spread of newly introduced or established pests. Under the provisions of the law, the infested area may be placed under quarantine, and other effective control measures may be taken.

## Sarawak

S. P. WILTSHIRE
Commonwealth Mycological Institute, Kew, England

### An Unrecorded Disease of Black Pepper

A disease of black pepper (*Piper nigrum*) is reported as causing considerable damage in Sarawak. From preliminary investigations the disease is very similar to the one reported by Barat [1] in Indochina, which is characterized by a severe root disorder which results in decline, defoliation, dieback and death of the plants. In Indochina, the disorder is believed to be initiated by the nematode *Heterodera marioni* which enables the fungi *Pythium complectens* or *P. splendens* to enter and rot the roots.

## Uganda

S. P. WILTSHIRE
Commonwealth Mycological Institute, Kew, England

### New Record of Sunflower Disease

Notification has been received at the Commonwealth Mycological Institute of a disease of sunflowers in Uganda, the symptoms of which closely agree with the published description of the sunflower virus disease recorded in Argentina by Muntañola. [2] The diseased plants show mosaic and necrotic spots on the leaves and black streaks and patches on the stems, resulting in premature death. A search for the disease in other parts of Uganda is in progress.

[1] Barat, H. "Étude sur le dépérissement des poivrières en Indochine," Arch. Rech. Agron. Cambodge, Laos, et Viet-Nam. 13:1–92. 1952. (Rev. Appl. Myc. 32 : 509.1953).

[2] Muntañola, M. "Descripción de una nueva enfermedad del girasol," Rev. Invest. Agr., B. Aires 2:205–212. 1948. (Rev. Appl. Myc. 29:366. 1950).

## United States

Plant Pest Control Branch
Agricultural Research Service
United States Department of Agriculture

### Mexican Bean Beetle Found in Idaho

A small infestation of Mexican bean beetle (*Epilachna varivestis* Muls.) was found in a bean field near Twin Falls in the State of Idaho during August 1954. All infested bean plants and plants surrounding the infestation were pulled and burned and the field treated with insecticide Subsequent surveys in the area have failed to reveal additional infestations. As far as can be determined this is the first occurrence of the pest in Idaho, although it is known in some of the other western states and infests wide areas throughout the eastern part of the country. In most areas where the insect occurs it is regarded as the major pest of beans.

### New Records of Other Insects

The tomato russet mite *Vasates lycopersici* (Massee) has been recorded in Virginia and North Carolina for the first time. This serious pest of tomato was virtually unknown in the eastern states until 1952, when outbreaks were discovered in Pennsylvania and New Jerscy.

European earwig (*Forficula auricularia* L.) was found in Delaware during July, and a linden mite *Eotetranychus tiliarum* (Herm.), new to the United States, was collected in Massachusetts. This mite, a species of unknown potential, was reported as being abundant on *Tilia platyphyllos*.

# PLANT QUARANTINE ANNOUNCEMENTS

## Australia

Under the provisions of the Nursery Stock Regulations, restrictions have been imposed on the importation of gladiolus corms and cormlets by the Director of Plant Quarantine, Commonwealth Department of Health, as a safeguard against the introduction of injurious diseases.

Gladiolus corms or cormlets may be imported only by approved importers for growth under post-entry quarantine. Not more than 5 corms or cormlets of any one variety may be introduced by any one importer in each year. Consignments must be accompanied by a certificate issued by a recognized authority in the country of origin, attesting that the corms or cormlets are considered free from disease and especially from gladiolus yellows (*Fusarium oxysporum* var. *gladioli*) and viruses such as bean yellow mosaic virus, tobacco ring spot virus and cucumber mosaic virus. Upon arrival the corms and cormlets are to be treated with an approved disinfectant and planted in isolation.

These restrictions have been imposed because of the constant detection of the yellows in imported gladiolus corms and because of the recent discovery in North America that gladiolus may be a reservoir of dangerous viruses including those mentioned above. Under the new system, the number of corms imported for the purpose of establishing new varieties or strains is likely to be small, thus making it possible for exporting countries to issue appropriate certificates and for a thorough inspection to be made upon arrival.

## British Honduras

The Pineapple (Importation from Mexico) Regulations of 9 June 1954, published as Statutory Instrument No. 40 of 1954, authorize the importation of pineapples from Mexico, conditional on the grant of a certificate of introduction by the Director of Agriculture. These regulations will expire on 31 December 1954.

Previously the importation of pineapple fruit from Mexico was prohibited by the Plants, Fruits and Vegetables (Importation) Regulations, 1947.

## India

Notification No. F. 6-6/54-Dte. I (PPS), dated 27 July 1954, amends Notification No. F. 320/35-A of 20 July 1936 with regard to the importation of plants by air.

The amendment provides that plants required for research and propagation by any institution or organization under the control of the Central Government or any State Government may be imported by air through the airports of Bombay or Madras. Such plants must be fumigated before export, securely packed in a container, and accompanied by an official phytosanitary certificate in the form prescribed in the Third Schedule of Notification No. F. 320/35-A. They will be inspected and, if necessary, fumigated again upon arrival.

The amendment provides further that the importation by air from Afghanistan of fruits and vegetables intended for consumption may be permitted after fumigation at the airport of Amritsar.

Notification No. F. 6-6/54-Dte. I, dated 4 August 1954, further amends Notification No. F. 320/35-A of 1936, specifying that the cost of fumigating fruits and vegetables imported by air from Afghanistan is to be paid by the importer, who is to follow the instructions of the officer in charge in this connection.

## United States

Foreign Quarantine Notice of 20 July 1954, published in the *Federal Register*, Vol. 19, No. 143, 24 July 1954, revokes the administrative instructions prohibiting the issue of permits for importation into Florida of citrus seeds, which were published as Foreign Quarantine Notice 319.37-24a in 1949. This revocation was based on the quarantine rules of the State of Florida, which have been modified recently to allow the entry of small quantities of citrus seed for experimental purposes.

Importation of citrus seeds into Florida hereafter will be subject to the requirements relating to inspection, treatment and issue of permits, specified in Regulation 4 of the Nursery Stock, Plants and Seeds Quarantine No. 37, covering seeds importable under permit.

# NEWS AND NOTES

## Changes in National Plant Quarantine Services

*Union of South Africa.* A new unit, the Division of Plant Control and Quarantine, has been established within the Department of Agriculture to administer all regulatory and legislative measures for plant protection, previously the responsibility of the Division of Entomology and the Division of Plant Pathology. Professor S. J. du Plessis was appointed in April 1954 as Chief of this new division.

Its functions will be, *inter alia*:

(*a*) Inspection and certification of tree nurseries, ornamental plants and vine nurseries;
(*b*) Inspection of potatoes intended for seed;
(*c*) Supervision of the application of treatments of orchards and cotton lands for the control of pests and diseases in proclaimed areas;
(*d*) Inspection of citrus orchards;
(*e*) Supervision of the application of measures prescribed for the control of pernicious scale on deciduous fruit trees and of wart disease in potatoes;
(*f*) Supervision and control of the introduction of all plant material with a view to preventing any possible introduction of dangerous disease organisms and insects.

The address of the Division is as follows:

Division of Plant Control and Quarantine
Department of Agriculture
Stellenbosch, Union of South Africa

*Sweden.* Professor Th. Lindfors, Head of the Swedish Plant Protection Institute (Statens Växtskyddsanstalt), died in late July 1954 from injuries incurred in an automobile accident. Dr. O. Ahlberg, Head of the Department of Zoology, is serving as Head of the Institute *ad interim*.

## International Commission on Plant Disease Losses

The International Commission on Plant Disease Losses met on 1 and 7 July 1954 in Paris, with eight of its thirteen members attending. In the absence of Dr. K. S. Chester, the Chairman of the Commission, Dr. E. Gram of Denmark presided over the meetings.

With reference to its functions, the Commission decided to confine itself mainly to studies of techniques for appraising disease losses. The present research methods for loss estimation were considered too elaborate in general, and the necessity of working out simpler methods was emphasized. It was considered, however, that the publication of a comprehensive handbook on this subject would be premature.

Several problems relating to loss estimation were discussed. It was considered that, in reporting estimates, it was essential to indicate the methods on which they were based, but that no recommendation could be made at present as to the units for expressing losses. Estimates expressed in monetary units have many advantages in immediate advisory work; the variability of the price factor may, however, render them misleading in regard to actual losses. Estimates of losses in yields may be based upon the normal yield of the actual or the preceeding year, or on the potential yield under comparable conditions as determined by control trials.

The members participating in the meetings expressed the wish that Dr. Chester continue to serve as Chairman and suggested that additional members be recruited to widen the geographic representation.

## Rhinoceros Beetle Control in the South Pacific

Rhinoceros beetle (*Oryctes rhinoceros*) is a serious menace to coconut palms in several parts of the Pacific. In the Palaus the mortality of palms caused by the beetle was estimated at 50 percent in ten years and in Western Samoa at 15 percent over forty years. On some islands bearing palms were practically eliminated by destructive attacks. The recent establishment of the beetle in Tonga and Fiji has aroused particular concern and has increased the fear of its wider dispersion.

At the Second South Pacific Conference held in Noumea in April 1953, an area-wide action to combat the beetle was suggested. The South Pacific Commission accordingly has established a Technical Advisory Committee, comprising seven entomologists appointed by governments and two technical officers of the Commission, to coordinate these efforts. Governments and administrations have intensified control measures and have carried out eradication campaigns in the

more recently infested areas, and the Commission has assisted with the pooling of experience and advice.

Since the use of insecticides does not appear at present to offer any promise, the South Pacific Commission has initiated a comprehensive research program under which two entomologists have been appointed to undertake the following investigations:

1. A search in India, parts of South-East Asia, Africa and Madagascar for parasites, predators and diseases which might be introduced into the Pacific to control the beetle.
2. A study of the ecology and chemical control of the beetle in Western Samoa.

It is expected that the program will be spread over at least three years; the first year's operations are financed by the Commission and by a contribution from Western Samoa. The investigations are coordinated by the Plant and Animal Quarantine Officer of the Commission.

Roma - Tip. del Senato del dott. Giovanni Bardi

# NEWS OF FAO PUBLICATIONS

## Zebu Cattle

As was expected, the Spanish edition of this unique collection of information on the subject (*Zebu Cattle of India and Pakistan*, $3.00, 15s.) is in great demand in all parts of Latin America. First news of its success came from Argentina, and fresh supplies have been sent to Mexico.

The cattle breeders' press of the Southern States of U.S.A. is enthusiastic about this book. It says that no other publication has collected so much useful information about these important breeds, and the illustrations were liked.

## Monograph on Legumes Reviewed

Respectful reviews in *Nature* (London) and the *Journal of Tropical Agriculture*, of the FAO monograph *Legumes in Agriculture* ($3.00, 15s.) have increased the already lively demand for this monograph in all parts of the world. FAO is commended for collecting information on an important subject.

## Continuing Demand for FAO Studies

Reports from London say that the demand for *Improving the World's Grasslands* (published for FAO by Leonard Hill Ltd., at 10s. 6d.) has been maintained. The second printing of *Soil Conservation: an International Study* (FAO, $2.00, 10s.) is widely used as a textbook in agricultural colleges.

## Multilingual Vocabulary

Swedish, Dutch, Italian, Portuguese, Spanish, German, French, and English are the eight languages used in the *Multilingual Vocabulary of Soil Science* ($4.00, 20s.) just published by FAO. It has been edited by G.V. Jacks in collaboration with soil scientists in all parts of the world. The project has been on the FAO program since 1949 and even in the very short time since the advance copies of the book have been in circulation, suggestions for improvements have come for consideration in the editing of a new edition. The vocabulary has already been in use at a meeting of soil scientists in Africa to which a small supply was taken by an FAO expert.

## Mechanization of Agriculture

The *Agricultural Machinery Journal* (August 1954) devotes a long review to FAO Development Paper No. 44, *The Successful Introduction of Farm Mechanization* ($0.50, 2s. 6d.). It points out that the booklet has drawn on practical field experience gained in many underdeveloped countries by FAO experts on missions for the UN Expanded Technical Assistance Program, and it draws attention to the appendix which gives a suggested four-week syllabus for an excellent farm machinery course. Since the publication of this review, and a short notice in *Tropical Agriculture* drawing attention to the practical approach of the book, our London agent has ordered fresh supplies.

## Books on Agriculture

FAO Agricultural Studies now include 27 titles, and the newer series of Agricultural Development Papers has 44 titles. Bulletins about those two important series are ready and will be sent on request.

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1945-1954

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